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ABSTRACT

This booklet is the third in a three part series dealing with individual and societal expectations of education in Canada and the relationship between basic goals and the principles of financing. This document examines some of the economic factors basic to the design and planning of school financing. The authors first examine the growth of education in the 60s and the consequences for the 70s. Included are data on educational enrollment and expenditure patterns in the 1960s, characteristics of Canadian school teachers, capital expenditures of schools, operating expenditures per pupil in relation to GNP, and projections for future expenditures in the 1970s. Various efficiency and equity goals in the financing of education are then considered. Within the framework of efficiency in resource allocation, the authors consider the methods of determining the resources designated for education, the allocation of these resources among different levels of education and at a particular level, the level of public support of education, the cost effectiveness of education, and the benefits of education between the public and private sectors. To point up equity goals, the authors then discuss equal educational opportunity, education and income distribution, the division of the tax burden among communities, and decentralization and the willingness to pay taxes. Additional data about educational finance in Canada are included in a series of tables in the appendix. Related documents are EA 005 381 and EA 005 382. (Author/DN)

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BASIC GOALS AND THE FINANCING OF EDUCATION

ED 079870

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CTF Project on Education Finance: Document 3

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CTF PROJECT ON EDUCATION FINANCE

Document One: **Woodrow S. Lloyd.** What Society May Properly Expect of the School.

Document Two: **Guy Rocher.** What the Individual Expects of the School.

Document Three: **Walter Hettich, Barry Lacombe, Max von Zur-Muehlen.** Basic Goals and the Financing of Education.

FOREWORD

The late sixties in Canada saw a rapid worsening of the climate for educators, who had enjoyed something like unquestioning acceptance for a brief period of years. American criticisms of the school system were gaining wide currency in Canada. On the one hand, it was asserted that the schools were tailored to the purposes of a specific economic system (with its social and political concomitants), and that that system was faltering if not altogether discredited. At the other pole, critics argued that the schools had become inefficient in serving the essential purposes of the prevailing social system. In the meantime, there was growing evidence that young people were increasingly unwilling to accept the authority of the school as a training and selecting device, and that parents and communities were unable or unwilling to compel them to go on doing so.

Against this background, the governmental agencies responsible for raising money for the support of the schools were beginning to assert with increasing firmness that taxpayers would no longer tolerate the growth of educational costs, and various restrictive measures were making their appearance.

The CTF Advisory Committee on Education Finance, which had for many years been concerning itself with the problem of financing the many unmet needs in education, concluded that the time was ripe for an attempt to define, at a basic level, the nature of the gap between current concepts of the proper function of the school in Canadian society and the reality of that function, and also the nature of the gap between current concepts of propriety in the public financing of schooling and the reality of the present situation. This would be the starting point for an attempt to explore the implications of an effort of improvement, and eventually to suggest some basic principles on which a rationale for the public financing of education should rest.

Accordingly, invitations were addressed, in the summer of 1970, to certain eminent Canadians to present their view of the concepts prevailing at the present time, in Canadian society, regarding individual and societal expectations of education and the relationship between basic goals and principles of financing. In this paper, three well known economists, Drs. Walter Hettich, Barry Lacombe and Max von Zur-Muehlen, present their views on some of the factors basic to the design and planning of school financing. When this paper was written, all three were attached to the Economic Council of Canada.

The other two papers in the series are by Dr. Guy Rocher and Dr. Woodrow S. Lloyd. The three papers in the series have provided the input for a series of seminars beginning in May 1971. A final report on the enquiry is expected to be published by the Canadian Teachers' Federation during the winter of 1972-73.

Norman Goble
Secretary General
Canadian Teachers' Federation

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THE GROWTH OF EDUCATION IN THE SIXTIES AND THE CONSEQUENCES FOR THE SEVENTIES

INTRODUCTION

Schools and institutions of post-secondary education have functioned as one of the most important agents for social transformation and as a basis for economic growth in the development of Canada. Therefore, it is disconcerting to observe that the public mood tends to regard further expansion in "education" with some misgivings and reservations.

The first section of this paper will trace the growth in enrolment and expenditures at the various levels of education during the past decade, and will extrapolate these historical series to 1980 under alternative assumptions. At the same time, the changes in the educational system and its characteristics will be explored and some general observations about present conditions and future trends in education will be made. The second section will focus on efficiency and equity aspects of education and will provide a discussion of the available alternatives within a theoretical framework for rational policy decisions.

EDUCATIONAL ENROLMENT AND EXPENDITURE PATTERNS IN THE 1960'S

As we all know, the decade of the sixties has been a period of tremendous development in Canadian education. In many instances, public attention has focused in these years on the growth of higher education rather than on the changes which have occurred in elementary and secondary education. Not only have both the old established and newly developed universities been subjected to an extraordinary expansion, but also new forms of post-secondary education have been created, such as the Colleges of Applied Arts and Technology in Ontario and the CEGEP's in Quebec. These developments have somewhat overshadowed the equally important changes that took place at the elementary and secondary school levels.

The outstanding feature of the sixties has been the growth in enrolment, particularly in secondary and post-secondary education. For

example, during the academic year 1960-61, 789,000 students were enrolled in secondary schools; in 1970-71 this figure has almost doubled, reflecting not only a general growth in population but above all an increase in the participation rate. During the same period the participation rate of the 14 to 17 age group increased from 67 per cent to almost 92 per cent (Appendix Table A-3). At the same time the retention rate – which refers to the enrolment in Grade 11 as a percentage of Grade 2 enrolment nine years earlier – increased from 50 per cent in 1960-61 to 71 per cent in 1967-68 (Appendix Table A-2). Naturally there were provincial differences, but during the sixties there was a noticeable tendency towards a decline in regional variations.

It might be of interest to compare the growth of elementary and secondary enrolment with that of post-secondary education. Elementary enrolment increased during the above-mentioned period by 23 per cent, secondary enrolment by 100 per cent, and university full-time undergraduate enrolment by almost 200 per cent. Even more spectacular was the growth in graduate enrolment of over 400 per cent. Although the last percentage figure might seem impressive in absolute numbers, it meant an increase from 7,000 to an estimated 33,000 full-time graduate students. The enrolment at community colleges increased from 12,000 to almost 160,000 full-time students. This expansion is partly a reflection of the structural changes which have taken place in higher education.

The participation rate in post-secondary education for the 18 to 24 age group changed from less than 10 per cent to over 20 per cent, which is still low in comparison to the United States participation rate. One of the consequences of the expansion in education in the early 1960's has been a rise in the average years of schooling. Between 1961 and 1966 the average years of schooling received by the labour force increased from 9.1 years to 9.6 years and is at present probably above 10 years (Appendix Table A-4).

In spite of the growth in enrolment and the ensuing demand for elementary and secondary school teachers, there was no general deterioration in the qualifications of teachers, only a reduction in years of teaching experience. The proportion of elementary school teachers with a university degree increased from 10.7 per cent in 1960-61 to 15.4 per cent in 1967-68 (Table II). For secondary school teachers the percentage with a university degree increased from 67.3 per cent to 72.8 per cent.

More impressive was the percentage increase in certification. Of the elementary school teachers 65.3 per cent had more than one certifi-

cate in 1960-61 whereas in 1967-68, 86.5 per cent had obtained these types of certification. A similar development can be observed for secondary school teachers. Even more pronounced was the increase in years of professional training after junior matriculation. Within the same time period the professional training of the average teacher increased from 1.8 years to 2.2 years. In contrast, the median years of teaching experience declined from 7.2 years to 6.7 years. The median time period with the same school board increased from 2.7 to 2.9 years; this change might reflect, among other factors, more favourable teaching conditions. Within this seven-year period the salary of elementary school teachers increased in current dollars from less than $4,000 to over $6,000. Moreover, the student-teacher ratio declined from 29 to 27.

The characteristics of secondary school teachers show a somewhat different pattern. Due to the high demand for a large number of new teachers, the median years of experience declined by over 50 per cent from 9.8 years to 6.2 years. Consequently, the median years with the same school board decreased from 3.2 to 2.8 years. In spite of the influx of a considerable number of young and less experienced secondary school teachers, the average salary increased from $6,000 to $8,700. Even more astounding was the substantial decline in the student-teacher ratio from 21 to 17, which was considerably below the student-teacher ratio in the United States. (This comparison requires cautious interpretation, however, since the difference may reflect definitional problems as well as variations in class size.)

Altogether, these selected characteristics show that, although a substantial enrolment expansion occurred, mainly in secondary education, this did not result in a deterioration in the quality of elementary and secondary education.

This growth was accomplished only at a considerable cost. Total educational expenditures increased almost three times, from less than $1.7 to almost $5 billion in current dollars, between 1960-61 and 1967-68 (Appendix Table A-5). The operating expenditures for elementary and secondary education per student almost doubled during this period, from $238 to $455 for the academic year.

The capital expenditures for elementary and secondary school building construction and equipment increased from an annual amount of $256 million in 1960 to $689 million in 1967. In comparison, the rate of growth of capital expenditures for universities was even more impressive, from only $26 million in 1956 to $318 million in 1967 (Table III).

TABLE I

ACTUAL AND PROJECTED FULL-TIME STUDENT ENROLMENT FOR SELECTED YEARS

Selected Years	Elementary and Secondary Education		Post-Secondary Education					
	Elementary	Secondary	Undergraduate		Graduate		Community College	
	(Thousands)							
1951-52	2,230	394	60		4		5	
1956-57	2,898	547	75		3		7	
1960-61	3,413	789	107		7		12	
1963-64	3,709	1,068	147		11		27	
1967-68	4,127	1,325	237		24		64	
	A	A	A	B	A	B	A	B
1970-71	4,188	1,581	319	310*	36	33*	159	159*
1973-74	4,019	1,717	417	354	53	38	216	192
1975-76	3,872	1,773	494	386	66	41	260	218
1977-78	3,786	1,757	560	422	85	45	299	247
1980-81	3,766	1,603	638	481	112	51	348	298

*Preliminary actual enrolment.

Note: "A" projections are derived from the Economic Council of Canada Staff Study 25;
"B" projections assume a national growth rate of 4.5% for university enrolment and 6.5% for community colleges.

Source: Statistics Canada and Economic Council of Canada.

TABLE II

SELECTED CHARACTERISTICS OF ELEMENTARY AND SECONDARY SCHOOL TEACHERS IN CANADA, 1960-61 and 1967-68[1]

	Elementary		Secondary	
	1960-61	1967-68	1960-61	1967-68
Number of Teachers	76,619	95,592*	27,629	53,952*
Percentage with University Degree	10.7	15.4	67.3	72.8
Average Years of Professional Training After Junior Matriculation	1.8	2.2	3.7	3.5
Percentage with Certificate Levels (more than one)	65.3	86.5	71.2	84.6
Median Years Experience	7.2	6.7	9.8	6.2
Median Years with the Same School Board	2.7	2.9	3.5	2.8
Average Salary	$3,745	$6,170	$6,059	$8,685
Student-Teacher Ratio	29	27	21	17

[1]Excludes Quebec
*1966-67

TABLE III

CAPITAL EXPENDITURES OF SCHOOLS AND UNIVERSITIES FOR SELECTED YEARS

	SCHOOLS				UNIVERSITIES				Total Schools & Universities	1960=100
	Building Construction	Machinery & Equipment	Total	1960=100	Building Construction	Machinery & Equipment	Total	1960=100		
1951	102	10	122	47.7	12	3	15	17.0	137	39.8
1956	173	17	190	74.2	22	4	26	29.5	216	62.8
1960=100	230	26	256	100.0	75	13	88	100.0	344	100.0
1963	425	51	476	185.9	118	20	138	156.8	614	178.5
1967	607	82	689	269.1	259	59	318	361.4	1,007	292.7
1968 (Prelim)	674	85	759	296.5	277	63	340	386.4	1,099	319.5

Source: Dominion Bureau of Statistics.

This increase in educational expenditures is reflected in the proportion of government expenditures that have been allocated to education. From 1960 to 1967 the percentage of all government expenditures for education increased from 14.6 per cent to 20.9 per cent, whereas the share of the defense expenditures decreased from 14.1 per cent to 8.7 per cent (Appendix Table A-6). In terms of the percentage of the Gross National Product during the same time period there was an over 50 per cent increase from 4.2 per cent to 6.6 per cent of educational expenditures.

PROJECTED EDUCATIONAL ENROLMENT AND EXPENDITURE PATTERNS IN THE 1970'S

If the trends of the sixties were to continue during the seventies, the increase in educational expenditures would accelerate at a disturbing pace. The "A" projections have shown that undergraduate and community college enrolment might have doubled and graduate students tripled. (Table I). In contrast, the "B" projections show a very different trend.

Elementary enrolment will gradually decline, while secondary enrolment will increase very slightly but will also decline eventually. Even though elementary and secondary enrolments are expected to remain rather stable, the cost per student is likely to rise due to increases in instructional costs as well as more comprehensive programs and a potential reduction in student-teacher ratio at the elementary level.

In this context, we should always bear in mind that the extrapolation of historical series to the future is subject to a wide variety of rather narrow assumptions and errors. The main objective of the "extrapolation" is to demonstrate that present trends could not continue unless society were prepared to reduce other areas of expenditures, such as health, welfare, defense, pollution and transportation, in favour of educational expenditures. These statistical projections in our discussion serve mainly an illustrative purpose and should not be considered as predictions.

For the "A" projection, it has been assumed that elementary and secondary cost per student will grow by 6 per cent in constant 1969 dollars and that post-secondary student cost will increase by 8 per cent annually; this projection is based on the historical trends of the last decade. The Gross National Product has been projected to grow annually by 4.5 per cent. This is one per cent below the potential projections made by the Economic Council, but the 4.5 per cent reflects better the present

economic reality. The number of part-time post-secondary students has been converted at the ratio of 4 to 1 to equivalent full-time students.

The vocational training and retraining programs of the federal and provincial governments have been excluded from this study. The expenditures for these manpower programs have grown from less than $50 million in the 1950's to over half a billion today. Public policy seemed to favour a further expansion of these institutionalized programs, for example, at the community colleges. But preliminary evidence indicates that the cost of these training programs might be much lower in a work environment.

If the Gross National Product grows by 4.5 per cent, educational operating expenditures at the elementary and secondary level will grow approximately at the same rate, thus absorbing about 4.5 per cent of Gross National Product (Table IV). University operating expenditures will grow from 1.8 per cent of the Gross National Product in 1970-71 to 5.3 per cent in 1980-81. Similarly, operating expenditures for community colleges will more than triple from 0.4 per cent to 1.3 per cent during the same period. Total educational operating expenditures will increase from 6.5 per cent of GNP to 11.2 per cent during this decade. If one includes the capital expenditure projections, the proportion of GNP absorbed by education might increase from 8.0 per cent to 13.0 per cent. (Table VI).

The distinguishing features of these growth projections are that elementary and secondary education expenditures which accounted for almost two-thirds of the GNP share in 1970-71 will decline to less than 42 per cent in 1980-81, whereas the share of university educational expenditures of the GNP will correspondingly increase from 27 per cent to 47 per cent. Considering that in the mid 1950's higher education accounted for only 0.5 per cent, this appears to be an extraordinary development.

It has been estimated that during the decade under discussion elementary and secondary operating cost per student will increase from about $600 to close to $1,100 in constant 1969 dollars (Appendix Table A-7). Although elementary and secondary enrolment will decline from an estimated 5.8 million in 1970-71 to 5.4 million in 1980-81, total operating expenditures will increase from 3.5 billion to almost 6 billion.

If present trends continue, university operating expenditures will increase by 360 per cent during the 1970's. The per student cost will increase from an estimated $3,780 to $8,161 in constant 1969 dollars. The total operating and capital expenditures for full-time equivalent university

TABLE IV

EDUCATIONAL OPERATING EXPENDITURES FOR FULL-TIME EQUIVALENT STUDENTS IN RELATION TO GROSS NATIONAL PRODUCT

(constant 1969 dollars)

	Elementary & Secondary Percentage of GNP	Percentage of Total Expenditures	University Percentage of GNP	Percentage of Total Expenditures	Community College Percentage of GNP	Percentage of Total Expenditures	Total Educational Expenditure Percentage of GNP
				Projection A			
1970-71	4.3	66.2	1.8	27.4	0.4	6.4	6.5
1973-74	4.5	58.0	2.6	33.9	0.6	8.1	7.7
1975-76	4.5	52.3	3.3	38.4	0.8	9.3	8.7
1977-78	4.6	47.3	4.1	42.4	1.0	10.2	9.7
1980-81	4.7	41.7	5.3	47.0	1.3	11.3	11.2
				Projection B			
1970-71	4.3	66.4	1.8	27.0	.4	6.6	6.6
1973-74	3.8	62.3	1.8	30.0	.5	7.7	6.2
1975-76	3.5	59.3	1.9	32.3	.5	8.4	5.9
1977-78	3.2	56.1	2.0	34.6	.5	9.3	5.7
1980-81	2.8	51.7	2.0	37.7	.6	10.7	5.4

students will increase from 1.9 billion to 7.7 billion (Table V and Appendix Table A-9). A similar development will occur in the expenditure patterns for community colleges. Their per student cost will grow from an estimated $1,728 to $3,731 and the operating expenditures for community colleges might increase five-fold.

The "A" projections are based on the assumption that the trends of the 1960's will continue in the 1970's. Yet recent developments seem to indicate that the expansion of educational expenditures might substantially moderate in this decade. For this purpose, the "B" projections have been developed. These "B" projections assume that the real growth of GNP would be 5.2 per cent annually, that university enrolment would increase by 4.5 per cent each year and that community college growth would be 6.5 per cent each year. It has been further assumed that the unit cost increase at all educational levels would be only half of the "A" projection. Similar modifications have been made for capital expenditures. As a result of these adjustments, total operating educational expenditures as a percentage of GNP might decline during the 1970's from 6.6 per cent to 5.4 per cent (Table IV). This reduction in educational expenditures is mainly attributable to the smaller number of elementary and secondary students and the levelling off of post-secondary enrolment.

Tables V and VI provide additional information about the expenditure patterns in education according to both the "A" and "B" projections. One could speculate that actual expenditures would fall between the two alternative projections provided. At this point in time, it appears that the "B" projections are more reasonable, and careful attention should be given to the "B" projections.

OBSERVATIONS OF THE DEVELOPING PATTERNS

Canadian society will be faced not only with the difficult decision regarding how much it should and can afford to spend on education, but also will have to appraise what proportion of its financial resources should go to each level of education. Is it justifiable that an increasing share of resources be allotted to university education and especially graduate instruction? How can a proper balance be achieved between elementary, secondary and post-secondary education; between university education and community colleges? One might argue that from a social point of view pre-school education might provide greater benefits to society than other forms of education.

TABLE V

PROJECTED OPERATING EXPENDITURES FOR FULL-TIME STUDENTS IN CONSTANT 1969 DOLLARS

	Elementary & Secondary Enrolment	Per Student Cost	Operating Expenditures	University Enrolment	Per Student Cost	University Operating Expenditures	Community College Enrolment	Per Student Cost	Community College Operating Expenditures
	(thousands)		(millions)	(thousands)		(millions)	(thousands)		(millions)
				Projection A					
1970-71	5,769	$ 614	$3,540	355	$3,780	$1,342	159	$1,728	$ 275
1973-74	5,736	731	4,193	470	4,762	2,238	216	2,177	470
1975-76	5,645	821	4,636	560	5,554	3,110	260	2,539	660
1977-78	5,543	923	5,115	645	6,478	4,178	299	2,961	886
1980-81	5,429	1,099	5,967	750	8,161	6,120	348	3,731	1,298
				Projection B*					
1970-71	5,769	614	3,542	381	3,780	1,439	204	1,728	352
1973-74	5,736	632	3,625	444	3,931	1,744	247	1,797	444
1975-76	5,645	651	3,675	490	4,088	2,002	280	1,869	523
1977-78	5,543	671	3,719	541	4,252	2,298	318	1,944	618
1980-81	5,429	691	3,751	619	4,422	2,737	383	2,022	774

*The "B" projections are based on full-time equivalent students by converting part-time students to full-time equivalent by ratio of 3.5 to 1, and 3.0 for graduate students.

TABLE VI

PROJECTED EDUCATIONAL OPERATING AND CAPITAL EXPENDITURES
FOR FULL-TIME EQUIVALENT STUDENTS IN RELATION TO GNP
IN CONSTANT 1969 DOLLARS

	GNP	Operating Expenditures	Percentage of GNP	Capital Expenditures	Percentage of GNP	Total Operating & Capital	Percentage of GNP
				(millions)			
	4.5%			Projection A			
1970-71	82,071	5,347	6.5	1,259	1.5	6,606	8.0
1973-74	93,655	7,229	7.7	1,417	1.5	8,646	9.2
1975-76	102,279	8,871	8.7	1,567	1.5	10,438	10.2
1977-78	111,689	10,808	9.7	1,802	1.6	12,610	11.3
1980-81	127,458	14,323	11.2	2,195	1.7	16,518	13.0
	5.2%			Projection B			
1970-71	81,122	5,333	6.6	1,259	1.6	6,592	8.1
1973-74	94,492	5,818	6.2	1,326	1.4	7,144	7.6
1975-76	104,524	6,199	5.9	1,372	1.3	7,571	7.2
1977-78	115,677	6,635	5.7	1,422	1.2	8,057	7.0
1980-81	134,677	7,262	5.4	1,498	1.1	8,760	6.5

There is no question that expenditures in education will become more selective and a trade-off is required with the academic aspirations of the educational establishment and the existing economic restraints. Questions will arise as to what criteria should be used in the allocation of educational expenditures. Later in this paper a rational framework will be provided for decision-making on the basis of efficiency and equity.

There are indications that all levels of education are less relevant in their teaching than present-day society requires. This is particularly true for the available teaching material such as Canadian textbooks and the inability to develop educational strategies for the utilization of television and programmed learning. It might be desirable to design many more work-study programs where students are exposed to a working environment which would have an impact on their attitudes and motivations. These integrated programs could be developed for post-secondary students as well as for secondary students.

In the past, university graduates have frequently regarded themselves as a privileged group within the labour force. In Canada the demand for educated manpower exceeded supply in spite of a considerable influx of well-trained immigrants. The inadequate supply of university and other post-secondary graduates led to substantial improvements in the employment conditions for these groups during the 1960's. Moreover, the professional organizations representing these graduates became much more powerful and effective in their negotiations with school boards, universities and governments. Some fear has been expressed that in future these professional bodies might have a detrimental impact on the rising costs of education.

Although there is a substantial need to upgrade the academic qualifications of teachers, particularly at the elementary school level, employment opportunities in elementary and secondary education will be limited in the 1970's. But on the supply side, there will be a growing number of graduates whose aspirations have been conditioned by the very favourable circumstances of the last decade. There are strong indications that university and other post-secondary graduates will be subject to the same vicissitudes of the labor market, such as potential unemployment or under-employment as experienced by the less educated segments of our society. This will be especially true if the growth rate of the Canadian economy continues to remain at an unsatisfactory level.

As already mentioned, the growth rate of public expenditures for education, particularly at the post-secondary level, has grown to a degree which society is unlikely to maintain in the future. Although schools and institutions of higher education have subjected themselves to self-examination and self-improvement, many of the changes which have occurred in the more efficient allocation of resources were caused by outside pressures. It is only natural that there should exist in the educational establishment a certain amount of resentment against the supervisory and controlling functions of governmental bodies and against the concern of the public. But it is also unlikely that schools and universities would reform themselves without the impetus of these interested groups and outside pressures.

A number of questions require much more attention than they have so far received. For example, is it necessary that many employment positions in our society require 17 or more years of uninterrupted education? Could the same results be achieved with 15 years of schooling? There is impressive evidence that the home and school environment determines who goes to institutions of higher learning. Although the universities and community colleges stress their "open door" policies, they have been only partially successful in improving access to higher education for the lower income groups.

The services and resources provided by many universities for part-time students and adult education programs appear to be inadequate in relation to the demand and the social and private benefits. From a public policy point of view, the continuous education programs have an additional attraction since the students frequently absorb a much larger share of the operating costs than in the more conventional forms of education.

Particularly at the post-secondary education level, much greater emphasis should be placed in the cost analysis on the foregone income of students, which is a large share of their contribution to education. At the same time, the various federal and provincial student support programs require not only synchronization but also more adequate attention to the impact of these programs on the accessibility of higher education and other equity considerations.

Recently the concern with efficiency aspects of the educational system has overshadowed the other causes of the growth in educational expenditures. There is no doubt that under the conditions of rapid expansion, the schools and post-secondary institutions have experienced in-

efficiencies in their operations, but the changes in the educational mix, the improvement in quality of education and the large increase in student numbers have contributed much more to the increase in educational cost than these existing inefficiencies. Therefore, it is unlikely that, in the future, substantial savings could be achieved through greater internal efficiency of the educational institutions. In the past few years, many of these institutions have developed criteria and methods to cope with internal inefficiencies and to improve the decision-making process. These developments will soon become much more noticeable to the public.

A greater hope for a deceleration of the growth rate in educational costs lies in the development of alternative approaches to education, in a division of labor between the various types and levels of education, and in restricting the length of the educational process. At the post-secondary education level, an Educational Opportunity Bank appears to be feasible, where the students could borrow and thus pay a much larger share of the educational costs. The repayment of these loans would depend on earning power after graduation and could take the form of a surtax on income.

Furthermore, through the uncoordinated growth of graduate programs and the tremendous expansion in the number of graduate students, a substantial burden has been placed on society. Although many favour a curtailment in graduate education at the time, a longer-term view in this matter seems desirable. In this context it should be remembered that the underinvestment in graduate education during the 1950's seriously contributed to the shortage of highly qualified manpower which existed in the 1960's. One of the results has been that close to 40 per cent of Canadian university teachers are foreign born and over 75 per cent foreign trained.

The time period to produce graduate degrees is many years; also, market forces are already at work which will induce many undergraduates not to undertake graduate education. But there is, however, a definite need to achieve better co-ordination among the graduate programs, not only within each province but also at the national level. For example, there are over 325 doctoral programs at Ontario's universities and probably over 1,500 master's programs in Canada. Many of these programs are relatively small and below the quality of the better Canadian programs. Under these circumstances, it appears desirable that some of these marginal programs be phased out and the better graduate departments further strengthened. This could also result in economies of scale and specialization in unit costs of graduate education.

At the undergraduate level, it appears that the usefulness of a general B.A. degree has declined considerably and does not reflect market requirements. It is, of course, not the main purpose of a university training to acquire marketable skills, but to obtain an education and cultural values. Moreover, it is rather expensive for society to utilize university as a screening device for certain jobs; other forms of education, such as community colleges, might be cheaper and more effective.

It appears that manpower analysis is a very underdeveloped "art" in Canada. Although there are considerable limitations to the usefulness of manpower planning (particularly for highly qualified manpower as discussed later in this paper), there is a definite need for basic research in this area and for the integration of manpower planning concepts into economic analysis.

In summary, the benefits of the considerable investment in education during the 1960's will manifest themselves over many years to come. But in recent years educational expenditures have been growing much faster than anticipated or planned. Moreover, it not only is important to create educated manpower, but to utilize it effectively. It appears that certain distortions are developing in educational expenditure patterns and that there is a need for a delicate balance among the various needs and resources of Canadian society. Unfortunately, our "affluent society" has remained an illusion.

GOALS IN THE FINANCING OF EDUCATION

In general, it is useful to classify the goals pursued in financing education as efficiency and equity. The efficiency goal recognizes that resources are scarce, that society has many competing needs and many alternative uses to which resources could be allocated, and that education is only one among these many alternatives. Consequently, the efficiency goal means that the resources allocated to education not be capable of producing more valuable outputs in some alternative pursuit and, similarly, that the resources allocated to other endeavours could not be better used in the educational system. The equity goal takes cognizance of the fact that education has certain distributional effects, some of which may be desirable, others which are not. It is concerned with the question of who benefits from the educational process and who does not benefit. As such, it tempers efficiency analysis in the sense that an activity may be undertaken which is not as efficient as another but which does have more appropriate distributional consequences. Society is pursuing many ends simultaneously. Two of these are economic growth and equality of opportunity. The efficiency goal is mainly related to the achievement of economic growth while the equity goal is related to equality of opportunity. Over some range these two goals may be compatible; however, it is also possible that some efficiency may have to be given up to achieve some desired equality of opportunity or vice versa. It is thus necessary to analyse both the efficiency and equity aspects of education, or any other activity, if its full effects are to be determined. The final decision between efficiency and equity rests with society.

EFFICIENCY IN THE ALLOCATION OF RESOURCES

We live in a world in which resources are scarce and needs unlimited. Consequently, it is necessary to ensure that available resources are used to best advantage if it is desired to satisfy human wants. The allocating of resources to best advantage has been termed efficiency. It is a major goal running through the economic system, and as such is a major goal in financing education. However, several variations flow from this common definition. It can be used to signify that the resources allocated to education not be capable of producing more value outputs in alternative pursuits. Similarly, efficiency can mean that the total resources allocated to education be distributed among the various levels

of education in relation to their success in producing outputs more valuable than inputs.

The term can also be applied to a particular level of education to denote the relationship between the inputs used at a particular level and the outputs of that level. Further applications of the term include the success of education in providing the skills required in the labour market and in the relationship between the skills acquired in the educational system and those needed in the labour market. In addition, the relationship between the benefits which are received by those involved in the educational process and the benefits which accrue to society in general also influences efficiency. These topics are not new and have generally been associated with one form of educational planning or another. This section will look at a few of these efficiency questions in more detail.

It may be worthwhile to make one further point. It is often thought that economics as applied to education is concerned solely with money or monetary gain. Economics, however, does not preclude the inclusion of humanistic values in its decision models. Indeed, most of the economic literature on the topic of education is quick to point this out. Further, monetary gain is not an end in itself. It is an indicator used in determining if available resources are being used in the best manner possible. This, in turn, allows available resources to go further in pursuing the other objectives society desires.

Education Vis-à-Vis Alternative Uses of Resources

Given resource scarcity, it is essential to ask if the volume of resources allocated to education is appropriate. Phrased differently, the question becomes, can some of the resources allocated to the educational system be used to better advantage in some alternative way or can some of the resources not allocated to education be better used in the educational system? To answer these questions certain theoretical and analytical techniques have been developed. For example, the concept of "human capital" was developed which viewed education as an investment similar to that of a capital good. This enabled education to be evaluated as other investment projects and allowed for a comparison of the "profitability" of alternative investment projects with education.

The more specific questions to be addressed are: What is the size of the net gain[1] from postponing current consumption in favour of alternative investments? And, secondly, how does the net gain on educational

[1] Net here refers to consideration of benefits in relationship to costs.

investments compare to those on other investments? Early work on the economics of education was addressed to answering these questions. These studies generally concluded that the net gains to society and to the individual from investments in education were substantial and compared favourably with the gains from alternative investments.[2] Such findings in the early 1960's resulted in the conclusion that more resources should generally be allocated to education, and to higher education (post-secondary) in particular.

The extent to which this still holds true is unclear in view of the magnitude of the increase in such investments. Assuming that technological change has not been rapid enough to absorb the increasing supplies of more educated labour, one would expect that the gains from investments in education have declined. However, it is impossible to accurately assess what has occurred over the past ten years. Moreover, as shown earlier, costs of education on a per pupil basis have increased rapidly and this is a further reason for suspecting that returns may have declined.

In addressing these questions, three methods of relating benefits and costs have been used. Essentially, all are very similar in that costs and benefits are treated in like manner. The costs of undertaking some activity, in this case education, are related to the benefits which will arise from allocating resources to that particular activity. The costs include the operating costs such as teacher salaries and administration; capital consumption allowances to take into account the use of capital facilities; and the opportunity costs of the student, such as the income foregone because of staying in the educational system as opposed to employment. Other costs, such as expenditures for books, travel, and other expenses incurred because of pursuing education, as well as the interest on the cost of capital, are also included. The benefit stream includes the enhanced productivity of the individual as indicated by the higher income earned, the cultural enrichment both of the individual and the community, and the number of other benefits both to the individual and to the community.

However, since both costs and benefits may occur over a period of years, it is necessary to take into account that a dollar received today is worth more than a dollar received at some future time. Alternatively, if current consumption is to be foregone in favour of future consumption,

[2] Economic Council of Canada, Second Annual Review, and "Incomes of Canadians", J.R. Podoluk, Chapter 5.

some compensation must be received to induce the foregoing of current consumption. People are willing to substitute future consumption for present consumption only when compensated for doing so. This consideration leads to the necessity of discounting to the present costs and benefits that will be obtained in future periods.

The rate of return is the rate of discount which equates the present value of costs with the present value of benefits. That is, the discounted flow of costs equals the discounted flow of benefits. The rate of return is expressed as a rate of discount, such as 10 per cent, 12 per cent, 15 per cent, etc. It means that, by discounting costs and benefits to be received in future periods by a particular discount rate, benefits will equal costs. Projects can then be ranked and undertaken in accordance with the rate of return, undertaking those with the highest return initially.

Benefit-cost calculations are different in that the rate of discount thought to represent the rate at which future consumption will be substituted for present consumption is used to discount both benefits and costs to the current year. The resultant discounted benefits are then divided by the discounted costs. If this ratio exceeds unity, the project should be undertaken; if it is less than unity, it should not be undertaken.

Net present values are similar to benefit-cost calculations since the rate of discount thought to represent the rate of transformation of present consumption for future consumption is explicitly introduced to discount the future flows of benefits and costs. However, discounted costs are subtracted from discounted benefits. Projects having the greatest discounted value of benefits minus discounted costs are undertaken.

Under certain conditions all yield similar results. In the real world, however, net present values offer the advantage that large projects having large net present values but lower internal rates of return will not be overlooked in favour of smaller projects having high internal rates of return.

In applying these techniques, it is necessary to express all benefits and costs in monetary terms. The application of these techniques from society's viewpoint has not been an overwhelming success for the reason that it is extremely difficult to place a monetary value on some of the outputs of the educational system. The major benefit that has been

quantified, in monetary terms, is the influence of education on the productivity of individuals receiving education. The results provide a ballpark minimum figure of the social net gains associated with investments in education. There are a number of other technical limitations which will not be elaborated here.

Consequently, it has been argued, and correctly so, that education provides benefits which are not captured in the types of calculations alluded to above. The benefits which are excluded range from benefits which accrue to the individuals receiving education, such as the consumption benefits flowing through the satisfaction and enjoyment of learning, the consumer durable benefits brought about through cultural enrichment, to a range of benefits not directly captured by the individuals involved in the educational process.

Estimates of the monetary value of some of the benefits not captured directly by individuals, at the elementary and secondary levels, have been made for the United States. Their magnitude on the basis of this study would seem to be not negligible, but very large indeed. The study, performed by Professor Weisbrod, indicated, for example, the value of the tax return services performed by taxpayers themselves and made possible through the effects of education on literacy to be about $250 million; the income tax is easier to administer than alternatives and he estimated a saving of $66 million because of this; elementary school support provides a return of 25 per cent of cost as a by-product because of child-care services, ignoring the value of these services to mothers who do not desire to work.

Another type of empirical evidence that has been used to show the relationship between education and economic growth is the Denison type of analysis. It is designed to ascertain the factors which have contributed to economic growth over some past period. This type of study has been used to argue that more resources be allocated to education, a purpose for which it is inappropriate. It tells us nothing about the efficiency of education in pursuing growth. Reliance must be on the types of analysis noted in discussions of efficient resource allocation.

A Digression on Public Support of Education

A topic that seems useful to raise at this point concerns the rationale underlying public support of education. The most general reason for this support is that private and social benefits diverge, such that investments undertaken by private individuals would be less than the social

optimum. The reason for the divergence of private and social benefits lies in the fact that certain benefits of education cannot be captured directly by the individuals. For example, in so far as education contributes to good citizenship, this will influence the total tenor of society. Many such examples of benefits which accrue to society in general exist. This rationale for public support represents an efficiency argument. The magnitude of these types of benefits has not been fully measured although the study noted earlier indicates that they may be very large at the lower educational levels. Theoretically, under this approach, all who receive benefits should pay in accordance with benefits received. In practice of course, this is a very difficult principle to apply.

A further reason for public support of education revolves about society's notion of equity or social justice. That is, society may desire to ensure that the burden imposed upon individuals in pursuing education is in some sense equitable, and provide equal opportunity to all children regardless of the parents' ability to support expenditures. In addition, part of the reason for government support may represent a concern for protection of children. The efficiency criterion for public support gives major consideration to the maximization of real income. Equity, by contrast, forces attention on the distribution of income and in off-setting any unfavourable effects for the education of children stemming from the distribution of income.

A final consideration for government support lies in the imperfections thought to exist in the capital markets and which prevent access to capital for educational purposes. This, if not offset in some way, would result in underinvestment in education. It is perhaps on this topic that major emphasis has been placed.

The spillovers of educational benefits between political jurisdictions are an important consideration in determining the political jurisdiction that should finance an activity. In education, it is likely that spillovers between school districts within a province would be large, given patterns of mobility. The same may be true at the provincial level. The critical consideration is the net position of the jurisdictional area. This may well influence the willingness of a particular jurisdiction to finance education, particularly if the jurisdiction views the additional taxes paid by those having higher education as a form of repayment for the educational services provided. Similarly, the geographic area over which benefits extend is an important consideration in determining the jurisdictions which should bear the financial burdens.

Allocation Among Levels of Education

The techniques outlined in the previous section can be used to determine where resources should be allocated within the educational system, subject to the limitations noted above. While these techniques have not been developed very far in this direction in Canada, a study using these techniques has been performed in the United States. In general, this study found that the largest net gains [3] were to be found at the lower levels of education with the exception of the last years of university. This conclusion would be even stronger if it were recognized that some portion of the benefits from higher educational levels are attributable to lower education, since it is lower education which opens the option for the individual to receive higher levels of education. The monetary value of this option has been estimated to increase the rate of return on an elementary completed education from 35 per cent to 53.9 per cent and on a secondary completed education from 14 per cent to 17.4 per cent in the United States. While Canadian data are not available on this topic, it would seem to be at least a reasonable postulation that perhaps too much emphasis has been given to post-secondary education relative to the elementary and secondary levels. The answer to this question is fundamental for it may well cast a great influence over educational policy.

It is also important to obtain information on the relative merits of particular programs at the various levels of education if an attempt is to be made to determine the proper distribution of resources between programs at a particular level. Again it is conceivable that too much emphasis has been placed on one type of program relative to others. Moreover, perhaps the common areas between programs can be expanded to ensure that cultural or other values are not shortchanged in favour of labour market values or vice versa, depending upon the desires for the educational system. It is important to know what each program is producing in terms of skills and aptitudes ranging from cultural development to skills useful in the economic system. The question can be posed as follows: Is the student getting out of education the mix of skills which is desired in particular programs? Again, no evidence can be brought to bear upon these questions. Nevertheless, the importance of seeking answers cannot be underestimated.

[3] This study utilized the rate of return technique.

Allocation in the Provision of Education at a Particular Level

The previous sections outlined the aggregate methods used in determining the relative efficiencies of allocating resources to particular activities. Underlying the cost figures noted above are a set of more detailed economic relationships. Among these are the manner in which inputs are combined to produce the skills and attitudes developed in children. This relationship, termed a production function, attempts to determine the influence of school and student inputs on a measure of school output. This enables one to see if inputs could be combined in a different and more efficient fashion to produce the desired outputs. For example, this type of analysis would allow determination of whether a reduction in the student-teacher ratio or improving teacher qualifications is a better way of obtaining the desired output. Similarly, it provides information on the relative contribution of school factors and home factors on the acquisition of particular skills. Of course, the inputs have costs, so it is necessary to compare the relative costs of changing, for example, the student-teacher ratio as opposed to improving the qualifications of teachers to the relative influence each has in contributing to the acquiring of knowledge. Output data which measure what has been learned are practically non-existent in this country unless one views graduates, retention rates, pass rates, failure rates, etc., as output measures.[4] These have, however, very serious limitations if one desires to relate outputs to inputs. Thus, output measures designed to determine what students actually do learn would seem to be an important prerequisite for meaningful analysis.

In the absence of such information, recourse has to be made to the available measures of output such as retention rates. Retention rates represent, in part, the accumulation of students' decisions to remain or leave the school system. These rates express the number of students in some particular grade to the number of students in some lower grade under an assumption of "normal" progress through the school system. They provide gross measures of the holding power of provincial educational systems. Thus, part of the variation in retention rates would seem to represent the varying capacities of educational systems to hold students for reasons either inside or outside the system.

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[4]This is not totally correct as the CAC project and Atkinson studies have measured what a student learns in part. The forms of these analyses seem to be more on the lost potential in the society rather than the factors which contribute to outputs and the way in which they influence outputs.

Among the factors outside the school sphere which would seem to impinge on the student's decision to remain or leave are the aspirations of the student and the parents' aspirations for the child. In addition, the method by which aspirations can be realized is also important. In our society, the primary method is through the educational system; however, if the student finds this method unacceptable, he or she may well leave and seek another vehicle. Similarly, students may not be prepared to accept the time perspective involved in reaching aspirations. The aspirations-related factors are outside the control of the school system, per se, although factors operating within the system may have some influence on aspirations. Among the factors indigenous to the educational system are the frequency of contact with teachers and the amount of individual attention; the competence of teachers; the number of guidance teachers and the frequency of contact; freedom in the choice of courses; the range of courses offered; and the existence of services to complement the classroom. Data on all these factors are limited so that what follows must be treated as no more than speculative.

In an effort to see how these factors influence students' decisions to leave or stay within the school system at the secondary level, some preliminary analysis was performed. The data were derived in part from the Careers Decision Project data collected by the Department of Manpower and Immigration. Students who leave the system were divided into two groups – those who did not expect to leave at the time of the manpower survey but who did in fact leave, and those who had a prior expectation to leave before in fact leaving. In the case of the former group, it seemed that factors operating within the school system played a heavy role in the decision to leave. In the case of the latter group, factors outside the education system seemed to provide the reason for leaving.

The important factors within the system based upon this rather imperfect analysis seemed to be the student-teacher ratio, the course choices open to the student, the quality of teachers, the number of guidance teachers per pupil, the time allocated to guidance, and the quality of guidance teachers. The factors operating outside the system, influencing those with a prior expectation to leave, included parental aspirations, decisions of friends to leave, and the desire to get a job. This is designed to provide a very rough approximation of the relationship between outputs of the education process as measured by retention rates to the inputs into the system. Ideally, one would like to relate measures of output of particular skills learned to the inputs into learning those skills. The above analysis points out that it may not be pos-

sible to do very much within the educational system, per se, to improve student retention. This, however, should be viewed as only a very preliminary analysis designed to illustrate the more fundamental analysis required to relate proper output measures to inputs.

If the data did exist which allowed an analysis of the more fundamental relationship between inputs and outputs, it would then be possible to relate these relationships to the costs of the various factors influencing output. This would allow for the best combination of resources to be used in producing the outputs of the educational system regardless of whether the outputs were for the development of economic or other skills. Indeed, the way in which resources are currently combined represents the views of decision-makers on what makes "good" education.

Viewing the relationship between inputs and outputs in cost terms has resulted in the widespread notion that economies of scale exist in the educational system. That is, the larger the school, the lower the cost for each additional pupil. In addition, administration costs may be reduced with school board consolidation. However, if economies of scale exist, they do not go on indefinitely as school size increases. The evidence is not clear on the topic of scale economies, although the existence of economies up to some point is intuitively appealing.

If it is found that resources at a particular level can be combined more effectively to produce the outputs of that level, then its relationship, in terms of allocating resources, with other programs will be altered. For example, a particular program is not undertaken because it fails to meet the efficiency criteria mentioned earlier. Suppose, however, that it is found that resources can be more effectively combined. The costs of the program will decline and let the value of the outputs remain unchanged. This means that the program may now be undertaken as its position is enhanced. Thus, even if a program is found to be inefficient in the sense stated above, it may be worthwhile to ask if resources could be combined differently and consequently, alter the costs or improve the outputs of the program. To do this type of analysis effectively, output measures related to what students actually learn must be developed.

An Analytical Tool to Complement Cost-Benefit, Rates of Return and Net Present Value Analysis – Cost-Effectiveness Analysis

Cost-effectiveness analysis can be usefully applied to public investment projects when the output of the activity cannot be expressed in

monetary terms because there exists no market where this output is priced. This is applicable to education as was noted earlier. It has been suggested that the difference between cost-benefit and cost-effectiveness analysis is that the former is specifically concerned with the economic benefits of projects while the latter takes account of a variety of non-economic objectives in addition to economic benefits. This perhaps inflates the case. In any event, given the difficulties in placing monetary values on certain educational outputs, this type of analysis serves as a useful complement to cost-benefit analysis. It can be performed on a number of projects at a point in time to determine which is the most preferred, or it can be done on one project over time to see if resources are being used more or less effectively. It essentially relates indexes of outputs to indexes of inputs. While this type of analysis would seem to have a high utility, it has not been widely used in the area of education.

Sectoral Efficiency – Relation Between Educational System and the Economy

While it is important to use resources efficiently in the school system, it is equally important to have the proper relation between the educational system and the rest of the economy. There is a direct link or connection between schools and the labour market. After passing through the educational system, most students must seek employment in industry, government or other branches of the economy. Those who go on to college or university merely postpone their entrance into gainful employment by a few years; they too will become part of the labour force in due time.

To what extent should the school system prepare students for the labour market? Is it the task of educational authorities to assure a smooth transition between school and work? Or, going a step further, should the requirements of the labour market dictate the nature of instruction and the content of the curriculum?

Throughout this paper, it is emphasized that the educational system must pursue a variety of goals. To prepare students for their working life can be only one aim among many. Few of those who have studied the true nature of education would claim that the needs of the labour market should dictate the content of instruction. At the same time, responsible educators are concerned with helping students to make a successful transition between school and work.

The problem of sectoral efficiency would be more tractable if we could specify clearly what the requirements of the labour market were going to be. If we knew in advance how many skilled workers of one type or another would be needed a fixed number of years from now, we could "plan" the educational system to produce the right number of skilled people. There are some social scientists who look to manpower planning as the policy of the future. Some even have visions of industrial and educational blueprints valid for ten or twenty years to come.[5]

A complete framework for planning requires several elements. Since the planner cannot establish the proper targets himself, he must start from a political document – the National Plan – which indicates desirable levels of gross national product for a period of at least five to ten years. He asks himself in effect: What are the manpower requirements for achieving the targets set in the Plan? It is not simple to arrive at an answer to this question, especially if a detailed answer is required. Targets must be broken down by economic sectors, sectors by industry, and industries by occupation. After the occupational breakdown by industry has been established, the required educational levels for each occupation must be determined. Finally, educational systems must be brought in line with manpower needs.

To anyone familiar with the Canadian economy, it will be obvious that such a planning process cannot be applied in Canada. Furthermore, it is difficult to implement such a process even in those countries which do have a National Plan. The major pitfalls arise from the necessity of projecting detailed industrial output targets and manpower requirements. In advanced economies, changing technology makes the task of projection a very difficult one. If the planners' foresight is less than perfect, they are likely to create much inefficiency in manpower utilization. In fact, the results may be a great deal worse than with no planning at all.

While strict planning is not feasible in the Canadian political framework, it is still possible to devise policy measures to influence the supply of manpower. Could we use forecasting of manpower needs to assist us in making better choices? Two points are important in this connection: (1) Whose decisions are to be improved? (2) How reliable are manpower forecasts?

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[5] The Socialist countries have also not succeeded in developing manpower planning policies which appear adequate.

As far as the reliability of forecasts is concerned, the previous discussion suggests caution. If they are difficult to make with planning, they are even more difficult to turn out in a market economy where we must contend not only with a changing technology, but also with shifting consumer tastes. Furthermore, one must realize that most jobs do not have precise educational requirements; many skills can be used in a variety of pursuits and occupations. As a result, manpower projections merely indicate the direction. If they are used with this limitation in mind, they do have their place in policy-making.

When we turn to the decision-makers, we have two groups – the students and the educational authorities. Both must play their role. The educational authorities must keep in touch with major developments in the labour market. The needs of the economy should be considered when vocational programs are designed and when the curriculum is determined. Changes in economic conditions – as reflected in manpower forecasts – should lead to a re-evaluation of existing programs. Most importantly, however, educational authorities should assist students in making career choices. They should not, however, try to determine their choices. There is no evidence that decisions by educational authorities lead to better allocation of human resources than individual career decisions by students who were supplied with accurate information on employment opportunities.

Balance Between Public and Private Benefits

Educators at times reject the emphasis on sectoral efficiency by pointing to the public benefits of education. It is not only the student who gains from education, but also the community where he lives. The full development of his personality will make him a better member of the collectivity; instruction in history and social studies may transform him into a politically active citizen or at least into an informed voter.

It is of course true that education creates public benefits or "externalities" to use a term favoured by economists. This is an important aspect of the educational enterprise and it provides a major reason for publicly operated schools. One may question whether privately operated schools, even if subsidized by the state, would produce the proper amount of public benefits. On the other hand, it should be recognized that it is a major purpose of the school system to transmit skills which will enhance earning power in later life. One may perhaps question whether the public operation of schools has not at times led to an under-emphasis on directly

useful skills. Educational administrators must strive to establish a proper balance between private and public benefits.

EQUITY

Efficiency is not the only goal sought in financing education. Equity is also an important goal. As with efficiency, equity has a number of possible definitions. Perhaps it is best to categorize these as equality of opportunity and fiscal equity. At the elementary and secondary level, emphasis is more likely to be placed on equality of opportunity, although fiscal equity (who pays and who benefits) may be very important, given differences in expenditures on education. In general, equality of opportunity is concerned with who is getting education and the type of education being received. Fiscal equity carries this one step further by attempting to relate the beneficiaries to those who bear the tax burden. The purpose is to determine if the net effect of educational expenditures is regressive, progressive, or neutral. For example, to ascertain if particular groups (e.g. income) receive benefits greater than costs or benefits less than the cost.

The existence of the equity goal alters to some extent the decision-making rules outlined above. These rules need to be supplemented with an analysis of the beneficiaries of particular educational programs. The extent to which efficiency will be foregone in favour of equity cannot be accurately determined. Nevertheless, it is possible that a less efficient allocation of resources in education may be undertaken because such an allocation has more desirable equity effects. However, if programs are designed to provide equity, it is important that they be efficient in achieving this objective.

Equal Educational Opportunity

It is not clear what is meant by equality of opportunity nor is it clear how it can be achieved. Equality of opportunity may refer to equal expenditures per pupil, it may refer to compensatory education, it may refer to equal rates of participation for students of equivalent ability, it may refer to equal participation for students of all social classes. At the elementary level, it would conceivably refer to either access to equivalent types of resources for all students, or the offsetting of exposed learning deficiencies, or both. At the secondary level, it may indicate the above, but also encompass equal rates of participation for students of equivalent ability and for students of all social classes.

Empirical evidence shows that participation rates for education do vary by income and social class, that expenditures per pupil do vary by income level of the community, and that these bring consequences which are undesirable. This evidence has led to increased awareness of the extent to which equality of opportunity is not being achieved. The question which cannot be accurately answered is the extent to which the differences in participation rates by social and ability class reflect financial barriers to continued education, stem from other socio-economic causes, or result because of the differences in resources allocated to the educational process. Nor are the answers clear and, of course, the answers may influence the manner in which one approaches equality of opportunity. In simple terms, those who advocate equal access to resources within the educational system must think that the observed differences in participation rates result to some significant extent from this inequality in resources. Those who argue for greater financial assistance must think that this provides the key barrier.

Alternatively, child psychologists think that environment plays a crucial role in determining learning abilities such that the observed differences in participation rates reflect this fact. If this approach is correct, it is necessary to offset those aspects of environment which contribute to exposed learning deficiencies. Indeed, child psychologists favour offsetting the negative effects of environment through preschool programs rather than having the elementary and secondary school system play the full compensatory role in offsetting exposed learning deficiencies. However, even with the case of preschool programs, it may be necessary to have these levels of education turn to a more compensatory role.

Perhaps it is best to use the following division. The empirical evidence shows large differences in participation rates. The question is to what extent does this represent financial barriers, differences in the resources allocated to schooling and differences in environment?

Depending upon what is desired, it is possible that equalizing expenditures per student may not provide the impact on equality of opportunity desired. Much has been accomplished on the question of students having the ability who do not continue their education, although much may remain to be done. Very little has been accomplished on finding answers about the factors which contribute to the process of learning. This would seem to be of more importance than simple consideration of cost differences.

Education and the Income Distribution

The concept of human capital has led to the recognition that this concept can be effectively used in studying the income distribution. Consequently, if such a relationship exists, the educational system and its policies can greatly influence the distribution of income. This influence can be favourable or unfavourable, given that certain goals for a more equitable income distribution may exist within society. Therefore, one can attempt to measure the degree to which the observed inequality in the income distribution is attributable to individual differences in the size of human capital investments.

Empirical analysis of the topic, using Canadian data, has revealed that the distribution of schooling produces a considerable amount of the inequality in the income distribution. Thus, it would seem that policies designed to improve the distribution of schooling can contribute to the goal of greater equality in the income distribution. In addition to the distribution of schooling, the rate of return on schooling is also thought to influence the skewness in the income distribution. Thus, holding everything else constant, the higher the rate of return from schooling, the greater the inequality in the income distribution. It is possible to analyse contemplated changes in educational policy in this respect. For example, a study of minimum schooling laws in Great Britain and The Netherlands indicated that these laws were likely to decrease the inequalities of years of schooling and income.

Sharing the Tax Burden Among Communities

In Canada, provincial and local governments share the major burden of financing elementary and secondary education. Both levels of government raise taxes to support the schools and both have a say in how expenditures are allocated.

While many countries assign a role to local boards or governments in raising funds for education, there are others which concentrate all taxing power at the provincial or even the national level. What are the advantages – and what are the problems – of decentralization? Should the Canadian provinces move toward concentration of fiscal responsibility at the provincial level?

The advantages can be understood better if the problems are outlined first. Most dissatisfaction with decentralization in taxation can be

traced to the great variations in wealth and income among communities. Differences in wealth lead to differences in tax burden; the richer communities are able to provide the same services at a lower average burden to the taxpayer. This may occur in two ways, each implying a somewhat different meaning of the word "burden". If we compare first two communities which are identical in all respects with but one exception – the second community has a higher average income – we can give the word "burden" a relative interpretation. Each taxpayer will pay the same total amount for education – the absolute burden is the same. However, the tax payment will constitute a larger proportion of the average person's income in the poorer community. In the terminology used by economists, the tax is regressive.

In reality, local boards do not levy income taxes; their taxing power relates to property. This gives rise to a second situation where burdens differ. Some communities have industries or commercial properties within their boundaries which can be taxed for school revenues. If we now compare two communities which have the same school population and the same average value of residential property, but which differ in industrial tax base, it becomes clear that even absolute tax payments will differ. Home owners in the community with little or no industry will have to make a higher average tax payment than home owners in the other community. Business or industry pays the difference – at least in appearance. In reality, the affected enterprises will shift the tax onto their customers through higher prices. Since most of them live in other communities or even outside the province, the local board with industry can in effect "export" some of the taxpaying burden away from home.

Reliance on the property tax has some other disadvantages which should be mentioned. If we compare different groups within the community, it becomes clear that not everyone is treated quite the same under this tax. Since the tax is not assessed on net worth but on market value (or some percentage thereof), owners with a large mortgage on their property pay the same tax as owners who have little debt, a feature making the property tax particularly burdensome to farmers. On the other hand, one must be careful to avoid a much current fallacy, namely that people living in apartments gain at the expense of home owners. Property taxes lead to higher rents and apartment dwellers must pay their full share.

The discussion so far suggests that many problems can be traced to the property tax. Is it only the type of taxation being used which creates the difficulties; could we maintain decentralization of fiscal

responsibility but make use of a different tax base? The answer, unfortunately, is "no". While it has many faults, the property tax is still the best candidate for raising local revenues. Other taxes either cannot be conveniently collected by local communities or they lend themselves to damaging competition between localities. Except for a few large cities, income and sales taxes do not provide a proper or attractive alternative.

Some students of local affairs have suggested that all school taxes should be imposed by the provinces. The problems raised so far can lead one to sympathize with this position. However, one should not overlook the advantages of decentralization. These advantages are real and worth some cost. Control of the schools lies at the heart of the matter. It is difficult to imagine a system where fiscal responsibility is centralized totally at the provincial level and where local boards and the local community retain a strong voice in the management of their schools. Historical experience has demonstrated repeatedly that fiscal responsibility and self-determination go together. In most centralized countries, local government presents a poor picture, being often no more than the appendage of a large bureaucracy.

Centralization inevitably leads to similarity or even sameness. The present system allows differences among communities: some have better schools than others; some are known for innovation, while others are more traditional. This affords the citizen some choice. He can move to a community which is well known for its educational system, and surveys show that many parents do so, even if it means higher property taxes. On the other hand, most students of education would agree that certain limits should be imposed on variations among communities. Many have proposed the so-called foundation plan, a plan which was invented in the United States and which forms the basis for state-local relations in several states and, more recently, in some provinces in Canada.

Discussion of the foundation plan raises a fundamental point and one which is perhaps not fully understood by the advocates of centralization. Provincial governments have a tool in grants-in-aid which can be used to offset many of the disadvantages of shared fiscal responsibility. Grants, e.g. transfers from the province to the local communities, can be made steeply progressive, favouring the poor localities heavily over the richer ones; or they can be used to maintain (or worsen) inequalities in fiscal ability. At the same time, grants can attempt to stimulate local effort. Most grants-in-aid are compatible with a large degree of self-determination at the local level. Analysis of grants systems in Canada suggests

that this policy tool has been used without much imagination in a number of provinces. While there are many areas where experience in the United States has little relevance to policy in Canada, grants systems are ones in which fruitful comparisons could be made. Of course, the Canadian provinces would also learn much from each other.

Decentralization and the Willingness to Pay Taxes

Those who study education and those who work in the school system are often concerned with the apparent unwillingness of some citizens to pay school taxes. Resistance is focused most often on the local share and it may take the form of protests by home owners who refuse to pay higher property taxes. It is tempting to argue that centralization of fiscal responsibility would eliminate much of this friction. One may also suspect that pressure groups who support the educational course can operate more effectively at the provincial level when making their influences felt. As a result, it is possible that centralization might increase the total amount of funds going into education.

In the preceding discussions, we have drawn attention to the disadvantages of centralization. We clearly have a situation here where costs and benefits of policy must be evaluated carefully. One should also keep in mind that changes in grant policy could well be made to weaken local taxpayers' resistance. The foundation plan, for example, enables each community to achieve a set level of expenditures per pupil at the same tax rate as all other communities, regardless of the size of its tax base. Only if it wants to provide educational services beyond this level is the community called upon to shoulder higher tax rates than its neighbours. The foundation plan can be amended in such a way that the province pays some percentage of expenditures beyond the basic level, and it is easily possible to relate the provincial share of such extra costs inversely to community wealth.

Finally, one should not forget that education must compete with other public needs for tax resources. This is as it should be in a world where needs seem unlimited, while resources are not. More funds for education does not always serve the educational cause. There are many children whose families depend upon welfare services provided by governmental agencies. There is some historical evidence that taxpayer resistance is related to the total tax bill and that attitudes change only slowly in this regard. If successful pressure for more funds to education results

in a decrease of available resources for public health and welfare services, many students may be ill served by such pressure. Citizens have many needs: education is but one of them, although an important one.

CONCLUSIONS

This paper has attempted to provide measures of the magnitude of future resources that will need to be allocated to education based upon certain assumptions and the experiences of the sixties. Enrolment and expenditure patterns which may develop in the seventies have been presented. In addition, some observations about the consequences of the emerging patterns have been offered.

Moreover, a discussion of the goals pursued in financing education was presented. It was pointed out that there exist many competing claims for resources, with education only one among many. This leads to the need to ensure that resources allocated to education represent an efficient way of using these resources. However, education is also used to pursue a number of goals other than economic growth. The result is that it is not entirely appropriate to analyse only the efficiency aspects of education. For example, education also contributes to equality of opportunity and this aspect of education also needs to be analysed in conjunction with efficiency aspects.

A number of questions were raised both about the goals being sought by the educational process and on the techniques used to provide answers. The general tenor of this section revolved about the desirability of taking a more rational approach to studying education, both in relation to other uses of resources and to alternatives within the educational system. The late sixties and early seventies have been marked by much questioning of education. If the questions raised are to be adequately answered, more analysis and improved and different types of information will be required. This paper has attempted to provide some flavour for the analytical techniques for answering the relevant questions.

APPENDIX TABLES

APPENDIX TABLE A – 1

ENROLMENT INDICES FOR FULL-TIME PUBLIC SCHOOLS AND POST-SECONDARY STUDENTS FOR SELECTED YEARS (1961 = 100)

	Elementary	Secondary	Undergraduate		Graduate		Community College	
1951-52	65.3	49.9	56.1		57.1		41.7	
1956-57	84.9	69.3	70.1		42.9		58.3	
1960-61	100.0	100.0	100.0		100.0		100.0	
1963-64	108.7	135.4	137.4		157.1		225.0	
1967-68	120.9	167.9	221.5		342.9		533.3	
			A	B	A	B	A	B
1970-71	122.7	200.4	298.1	289.7	514.3	471.4	1325.0	1325.0
1973-74	117.8	217.6	389.7	330.8	757.1	542.9	1800.0	1600.0
1975-76	113.4	224.7	461.7	360.8	942.9	585.7	2166.7	1816.7
1977-78	110.9	222.7	523.4	394.4	1214.3	642.9	2492.7	2058.3
1980-81	110.3	210.8	596.3	449.5	1600.0	728.6	2900.0	2483.3

Note: "A" projections are derived from the Economic Council of Canada Staff Study 25;
"B" projections assume a national growth rate of 4.5% for university enrolment and 6.5% for community colleges.

Source: Statistics Canada and Economic Council of Canada.

APPENDIX TABLE A-2

PARTICIPATION RATE OF FULL-TIME SECONDARY AND POST-SECONDARY STUDENTS BY SELECTED AGE GROUPS AND YEARS

	Secondary	Community College	University	Total Post-Secondary
	14-17 age	18-21 age	18-24 age	18-24 age
1951-52	46.4	3.2	4.2	6.0
1956-57	56.2	3.8	5.0	7.1
1960-61	66.5	5.2	6.7	9.8
1963-64	77.1	6.6	8.6	12.6
1967-68	86.2	7.7	11.3	16.1
1970-71	91.8	11.0	12.7	20.5
1973-74	92.6	14.4	16.4	24.9
1975-76	93.6	15.9	18.3	27.8
1977-78	91.8	17.4	19.9	30.2
1980-81	92.4	19.5	22.1	33.2

Source: Economic Council of Canada, Staff Study 25.

APPENDIX TABLE A-3

RETENTION RATES, BY PROVINCE*

	1960-61	1967-68	Percentage Change
Newfoundland	38	49	29
Prince Edward Island	36	66	84
Nova Scotia	47	65	37
New Brunswick	44	60	35
Quebec	33	70	113
Ontario	56	73	32
Manitoba	61	80	32
Saskatchewan	56	70	26
Alberta	64	79	23
British Columbia	68	82	22
Canada	50	71	42

*The retention rate refers to enrolment in Grade 11 as a percentage of Grade 2 enrolment nine years earlier.

Source: Economic Council of Canada

APPENDIX TABLE A-4

AVERAGE YEARS OF SCHOOLING OF THE LABOR FORCE BY REGION

	1951	1961	1966
Atlantic Region	7.9	8.8	9.3
Quebec	8.1	8.2	8.7
Ontario	9.1	9.5	9.9
Prairie Region	8.5	9.3	9.7
British Columbia	9.3	10.1	10.5
Canada	8.6	9.1	9.6

Source: Economic Council of Canada

APPENDIX TABLE A-5

EDUCATIONAL EXPENDITURES IN CANADA FOR SELECTED YEARS IN CURRENT DOLLARS

	Total Educational Expenditures		Operating Expenditures for Elementary & Secondary Students	
	Millions	(1956-57-100)		(1956-57-100)
1956-57	$ 929	100.0	$172	100.0
1960-61	1,657	178.4	238	138.4
1963-64	2,485	267.5	290	168.6
1967-68	4,928	530.5	455	264.5

APPENDIX TABLE A-6

EXPENDITURES OF ALL GOVERNMENTS BY SELECTED FUNCTIONS AND SELECTED YEARS

	Year				
	1950	1955	1960	1965	1967
	As Percentage of Total Expenditures				
Defence	14.7	24.6	14.1	9.9	8.7
Health	5.6	5.2	7.8	9.0	11.7
Education	10.7	11.4	14.6	16.4	20.9
	As Percentage of Gross National Product				
Defence	3.4	6.3	4.1	2.9	2.7
Health	1.3	1.3	2.2	2.9	3.7
Education	2.5	2.9	4.2	4.8	6.6

Source: Dominion Bureau of Statistics and Economic Council of Canada

APPENDIX TABLE A-7

PROJECTED OPERATING EXPENDITURES FOR FULL-TIME EQUIVALENT STUDENTS IN CONSTANT 1969 DOLLARS

	Elementary & Secondary		Universities		Community Colleges		Total	
	A	B	A	B	A	B	A	B
	6%	3%	8%	4%	8%	4%	8%	4%
1970-71	3,540	3,542	1,463	1,439	344	352	5,347	5,333
1973-74	4,193	3,625	2,448	1,744	588	449	7,229	5,818
1975-76	4,636	3,674	3,410	2,002	825	523	8,871	6,199
1977-78	5,115	3,719	4,586	2,298	1,107	618	10,808	6,635
1980-81	5,967	3,751	6,733	2,737	1,623	774	14,323	7,262

APPENDIX TABLE A-8

EDUCATIONAL OPERATING EXPENDITURES FOR FULL-TIME STUDENTS
IN RELATION TO THE GROSS NATIONAL PRODUCT IN CONSTANT 1969 DOLLARS*

	Elementary & Secondary Operating Expenditures	% of GNP	Percentage of Total Expenditures	University Operating Expenditures	% of GNP	Percentage of Total Expenditures	Community College Operating Expenditures	% of GNP	Percentage of Total Expenditures	Total Educational Operating Expenditures	% of GNP
1970-71	3,540	4.3	68.6	1,342	1.6	26.0	275	0.3	5.3	5,157	6.3
1973-74	4,193	4.5	60.8	2,238	2.4	32.4	470	0.5	6.8	6,901	7.4
1975-76	4,636	4.5	55.2	3,110	3.0	37.0	660	0.6	7.9	8,406	8.2
1977-78	5,115	4.6	50.3	4,178	3.7	41.0	886	0.8	8.7	10,179	9.1
1980-81	5,967	4.7	44.6	6,120	4.8	45.7	1,298	1.0	9.7	13,385	10.5

*Assumes a 4.5% growth rate of the GNP

APPENDIX TABLE A-9

PROJECTED CAPITAL EXPENDITURES OF SCHOOLS AND UNIVERSITIES FOR SELECTED YEARS IN CONSTANT 1969 DOLLARS

	Schools				Universities			
	Building Construction		Machinery & Equipment		Building Construction		Machinery & Equipment	
	4%	1%	6%	2%	10%	3%	10%	3%
	(millions)							
1970	757	757	98	98	329	329	75	75
1973	819	780	110	104	398	360	90	82
1975	852	796	123	108	482	381	110	87
1977	958	812	138	113	583	405	133	92
1980	1,078	836	165	119	776	442	176	101

APPENDIX TABLE A-10

EDUCATIONAL EXPENDITURES PER MEMBER OF THE LABOR FORCE
(in current dollars)

	Educational Expenditures	Labor Force	Per Labor Force Member
	(millions)	(thousands)	
1957	1,100		$ 181.00
1967	4,900	7,637	642.00
1975	13,307(a)	9,545	1,394.00
1975	18,165(b)	9,545	1,903.00

(a) Based on 10 per cent growth rate for elementary and secondary education, and 20 per cent for higher education

(b) Historical growth rate between 1957-1967

APPENDIX TABLE A-11

EDUCATIONAL EXPENDITURES IN RELATION TO GNP
(in current dollars)

	Gross National Product	Total Educational Expenditures	Percentage of GNP	Higher Education	Percentage of GNP
1957	31,900	1,100	3.5	160	0.5
1967	64,500 (est)	4,900	7.6	1,300	2.0
1975	113,333(a)	16,175(a)	14.3	6,811(a)	6.0
1975	123,879(b)	11,706(c)	9.4	5,590(d)	4.5

(a) Based on historical growth between 1957-1967.

(b) An annual growth rate of 8.5 per cent has been assumed, including inflation.

(c) A growth rate of 10 per cent for elementary and secondary education and vocational training has been assumed, and 20 per cent for higher education.

(d) A 20 per cent growth rate has been assumed.

APPENDIX TABLE A – 12

FORMAL EDUCATION AND VOCATIONAL TRAINING EXPENDITURES IN CANADA

(current dollars)